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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,593	11/13/2003	Khurram Muhammad	TI-34776	8991
23494	7590	12/12/2006		
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER LE, DINH THANH	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/712,593

**Applicant(s)**

MUHAMMAD ET AL.

**Examiner**

DINH T. LE

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9/25/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9/25/06 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-17,19,24,26-35 and 37-39 is/are rejected.
- 7) ☒ Claim(s) 5,18,20,25 and 40 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## NON-FINAL REJECTION

The rejections over Arvidsson et al (US 6,41,541) are withdrawn in view of the arguments presented in the amendment.

### *Claim Objection*

Claims 26-27 are objected to because they depends on the canceled claim 21. Correction is required.

### *Claim Rejections*

#### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 17 and 28-35 and 37-38 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 8-15 of copending

Application No. 11/388,558. Although the conflicting claims are not identical, they are not

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patentably distinct from each other because both invention recites the cascade of IIR filters comprising:

- a charge capacitor;
- a first rotary capacitor;
- a second rotary capacitor;
- a buffer capacitor
- a comparator; and
- a negative feedback loop.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 2-3 and 6-16, 19 and 39 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 6-7 and 21-23 of copending Application No. 11/388,558 in view of Yasuda (US 6,181,740).

The application ('558) recites a cascade of IIR filters circuit but does not recite that the IIR filters are comprised solely capacitors and switches.

Nevertheless, Yasuda suggests in Figure 9 the IIR filter which is comprised solely switches (SW11-SW1n) and capacitors (C11-C1n), see lines 65-67, column 4 for being implemented on an IC, lines 1-6, column 5.

It would have been obvious to a person having skill in the art at the time the invention was made to incorporated the suggestion of Yasuda into the application ('558) for the purpose of being implemented on an IC.

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Regarding claims 19 and 39, selecting the optimum number of two rotary capacitors for the purpose of accommodating with requirement of a predetermined system is considered to be a matter of a design for an engineer and that would have been obvious at the time of the invention.

This is a provisional obviousness-type double patenting rejection.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 4, 6-7, 16 and 24 are rejected under 35Usc 102 (b) as being anticipated by Yasuda (US 6,181,740).

Regarding claims 4, 16 and 24, Yasuda discloses in Figures 3 and 9 a circuit comprising:

- a IIR filter (105, Figure 3) which including a plurality of single pole IIR filters in cascade (C11, SW11) and C12, SW12). Noted that each pole is formed by a capacitor of the capacitors (C11-C1n);
- means for direct sampling (SW1, SW2) coupled to the filter (105); and
- at least one amplifier stage (401) coupled to the filters (Figure 9).

Regarding claims 2 and 6, wherein the cascade of single pole IIR filters together implement a high order filter devoid of amplifier.

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Regarding claim 7, wherein the cascade of single pole IIR filters is operational to create a uni-directional flow of information, signal, or charge and disallow any feedback from a later filter stage to an earlier filter stage.

Claim 28 is rejected under 35 USC 10(b) as being anticipated by Avidsson et al (US 6,414,541).

Arvidsson et al discloses in Figure 1 a filter circuit comprising:

- a cascade of IIR filters (C1-C6, S1-S6, n1-n6) comprising a history capacitor (C1); and
- a first rotary capacitor (C2).
- Noted that each pole of the filter is formed by a capacitor of the a capacitors (C1-C6).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7 and 16 are rejected under 35 USC 103(a) as being unpatentable over Simon et al (GB 2230627) in view of Yasuda (US 6,181,740).

Regarding claim 16, Simon et al discloses in Figures 4-6 a second order filter comprising a cascaded a single pole IIR filters ((50, 50', 50'') to form a high order filter for generating an output signal (Y<sub>n</sub>) from an input signal (U<sub>n+3</sub>).

However, Simon et al does not disclose that the filters comprise solely of switches and capacitors.

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Nevertheless, Yasuda suggests in Figure 9 the IIR filter which is comprised solely switches (SW11-SW1n) and capacitors (C11-C1n), see lines 65-67, column 4 for being implemented on an IC, lines 1-6, column 5.

It would have been obvious to a person having skill in the art at the time the invention was made to incorporated the suggestion of Yasuda into Simon et al for the purpose of being implemented on an IC.

Regarding claims 6-7, the modified filter of Simon et al in view of Yasuda would devoid amplifiers and create an uni-directional flow of information.

Claims 6-7 and 16 are further rejected under 35 USC 103 (a) as being unpatentable over Lee et al (US' 5,732,002) in view of Yasuda (US 6,181,740).

Regarding claim 16, Lee et al discloses in Figure 1 a filter comprising a cascaded a single pole IIR filters (14, 16, 18, 20) to form a high order filter for generating an output signal (34) from an input signal i32).

However, Lee et al et al does not disclose that the filters comprise solely of switches and capacitors.

Nevertheless, Yasuda suggests in Figure 9 the IIR filter which is comprised solely switches (SW11-SW1n) and capacitors (C11-C1n), see lines 65-67, column 4 for being implemented on an IC, lines 1-6, column 5.

It would have been obvious to a person having skill in the art at the time the invention was made to incorporated the suggestion of Yasuda into Lee et al for the purpose of being implemented on an IC.

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Regarding claims 6-7, the modified filter of Lee et al in view of Yasuda would devoid amplifiers and create an uni-directional flow of information.

***Allowable Subject Matter***

Claims 5, 18, 20, 25 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. These claims are allowed because the prior art of record fails to suggest the “multi-tap direct sampling mixer” and “the ping pong fashion” in combination as claimed.

***Response to Applicant's Arguments***

The applicant's arguments over Arvidsson et al (US 6,41,541) and Yasuda (US 6,181,740) are persuasive without traverse.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DINH T. LE whose telephone number is (571) 272-1745. The examiner can normally be reached on Monday-Friday (8AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIMOTHY CALLAHAN can be reached at (571) 272-1740.

Information regarding the status of an application may be obtained from the Patent



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12/8/06



**DINH T. LE**  
**PRIMARY EXAMINER**